

TEC-LITE TNR-40 Series provides decimal readout from decimal input signals of low level. Rectangular NIXIE Tube numeral elements are controlled by self-contained transistorized circuitry. All numerals may be turned off when no indication is required. Supply voltage is confined to the panel area and the complete module mounts on one-inch centers.

Bezel assemblies, incorporating Polaroid® filters and protective glass are an optional feature and are described on the reverse side of this sheet.

SPECIFICATIONS

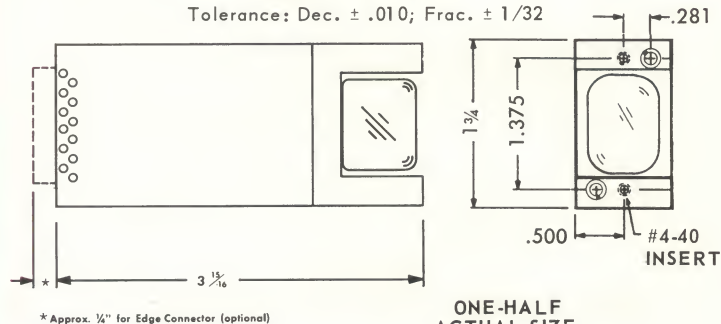
Electrical: Signal, supply and other electrical characteristics of the TNR-40 Series are shown in the table at the right. Additional electrical data appears on the reverse side of this sheet.

Mechanical: Dimensional and mounting diagrams are shown below. Other mechanical information is listed on the reverse side.

Materials Specifications: See reverse side.

OUTLINE DRAWING

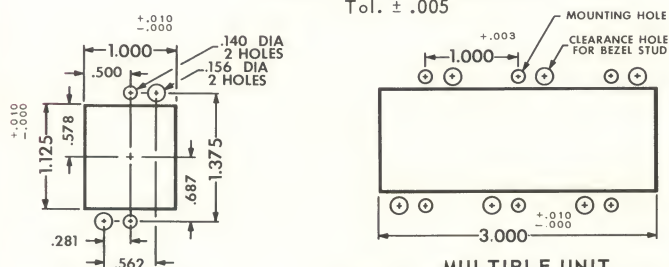
Tolerance: Dec. $\pm .010$; Frac. $\pm 1/32$



ONE-HALF
ACTUAL SIZE

PANEL HOLE DIMENSIONS

Tol. $\pm .005$



SINGLE UNIT

TYPICAL 3-UNIT MOUNTING SHOWN

MODEL NUMBER CODING...Specify fully when ordering

MODEL NUMBER
See Table at upper right

TNR-40X-XX

EXAMPLE: TNR - 40B - A1

Transistorized NIXIE Readout; Decimal input, decimal readout; Signal, ON $+5$ to -10 volts, OFF, $+4$ to $+6$ volts; 0 through 9 numeral sequence; Turret Lug terminals.

CHARACTER SEQUENCE

A-0-9 D-0-3
B-0-7 E-0-1
C-0-5 F-+ -

Other Characters or Sequences:
Inquire.

TERMINALS:

1-Cadmium Plated Turret
(Standard)
2-Edge Connector
(Optional)

POLAROID® Polaroid Corp.

NIXIE® Burroughs Corp.

All Specifications Subject to Change Without Notice



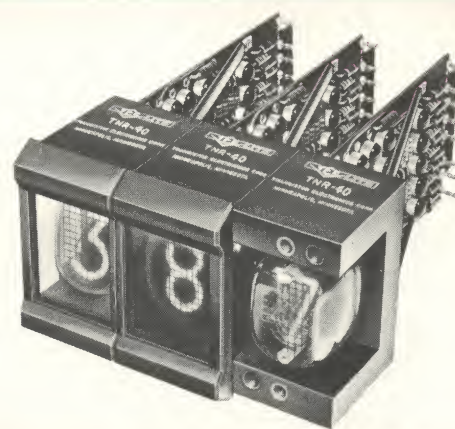
Transistor Electronics Corporation

TELEPHONE
(612) 941-1100

BOX 6191
MINNEAPOLIS, MINN. 55424

TELETYPE
910-576-2860

LOCATED ON COUNTY ROAD 18 • $\frac{1}{2}$ MILE SO. OF U. S. HWY. 169



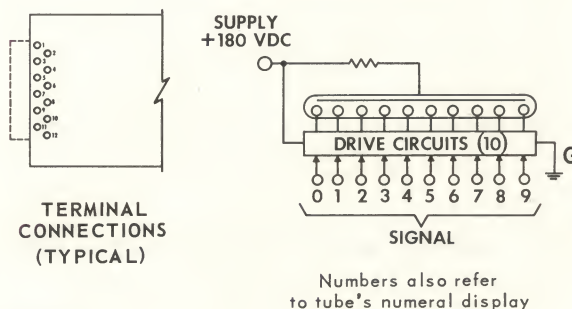
SIGNAL LOGIC DECIMAL INPUT : DECIMAL READOUT

Model	Signal Voltage		Typical Signal Current		Internal Input Resistor
	On	Off	On	Off	
40A	$+4$ to $+15$	$+5$ to -2	$+8$ ma @ $+6$ V	-25 ua typ -200 ua max @ 0 V	4.7K
40B	$+5$ to -10	$+4$ to $+6$	-3 ma @ 0 V	$+25$ ua typ $+200$ ua max @ $+6$ V	*
40C	-4 to -10	-5 to $+2$	-3 ma @ -6 V	$+25$ ua typ $+200$ ua max @ 0 V	*
40D	-5 to $+15$	-4 to -6	-1 ma @ 0 V	-5 ma @ -6 V	4.7K

*These models have emitter input type driver circuits without a series input resistor. The on current includes tube current (approx. 2.5 ma) and drive current which is internally limited to approximately .5 ma.

SUPPLY VOLTAGE: $+180 \pm 10$ VDC @ 2 to 3 ma

ELECTRICAL CONNECTIONS





TRANSISTORIZED DIGITAL READOUT WITH NIXIE® TUBE

SPECIFICATIONS

ELECTRICAL

Signal and Supply Voltage: See table on reverse side.

Character Sequence: Standard units offer numeral displays of 0 through 9, 0 through 7, 0 through 5, 0 through 3, 0 through 1 and a "plus, minus" display. Combinations of these units provide lower cost readouts for such applications as degree, clock or octal displays. Other numeral, character or alpha sequences are available on special order.

Tube: Burroughs rectangular ultra-long life NIXIE. Flat face envelope brings characters closer to front of tube to increase viewing angle. Numerals are .610 high, nominal. Life expectancy: 100,000 to 200,000 hours if all elements are used uniformly. Rugged elements are not subject to catastrophic failure.

Mode of Operation: Internal transistor circuitry operates from signal changes as small as two volts to control tube's elements.

LPS Series Power Supplies: Provide exact supply voltages for neon readout tube operation. Compact units can be mounted in any convenient location. See LPS Series power supply catalog sheet or inquire for details.

MECHANICAL

Dimensions and Mounting: See drawing on reverse side. Each TNR Series unit mounts from the rear with two #4-40 binder screws (supplied).

Socket: Integral tube socket contains a complete molded diallyl phthalate unit with bezel and panel mounting hardware.

Terminals: Cadmium plated turret lug terminals are standard. Edge connector optional at slight additional cost. (Specify requirements.)

Temperature Range: Driver Assembly, operating and storage -65°C to $+85^{\circ}\text{C}$ at 95% humidity, maximum. NIXIE Tube: $+20^{\circ}\text{C}$ to $+55^{\circ}\text{C}$.

CIRCUITRY AND

MECHANICAL OPTIONS

TNR Series Readout devices offer a wide range of functional options including coded input to decimal or octal readout, counters and memories.

Custom Built TNR Series can be designed to meet electrical or mechanical design characteristics differing from those described in this sheet. Specify all available signal and supply voltages and their polarity, mechanical or dimensional limitations, unique design (appearance) preferences and indicate quantities required for quotation. Use TEC Form 249, "Electrical-Mechanical Requirements for TEC-LITE TNR Series Transistorized Digital Readout."

Display Punctuation Life: Decimal point, degree or colon symbol can be provided by this unit which uses transistor controlled or conventional neon or incandescent lamps. See DPL Series catalog sheet or inquire for specifications.

MATERIALS SPECIFICATIONS*

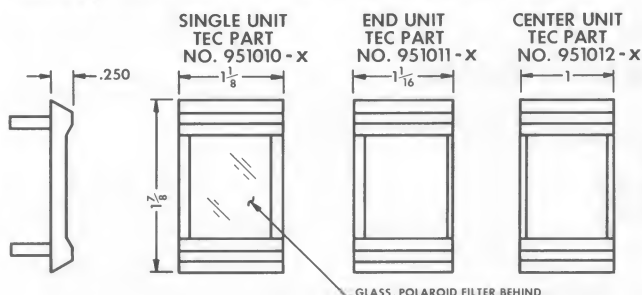
Body: (front section): Molded diallyl phthalate.

Driver Board: Epoxy glass laminate.

Terminals: Cadmium plated turret lug. Edge connector optional.

*Certificate of Compliance and Government Source Inspection Available.

BEZEL ASSEMBLIES FOR TNR SERIES



Front Panel appearance and character legibility are improved by bezel assemblies which include protective glass and a choice of Polaroid filter colors: -1, amber; -2, red; -3, neutral. Bezel units, made of glass filled nylon, are made in three styles: "Single", for single unit installation, "End" and "Center" units for multiple, side-by-side installation. Bezels are installed without tools by simply pushing bezel studs into bezel mounting clips in the TNR series body. Black color standard, other colors on special order. NOTE: Bezels designed for 3/16" maximum panel thickness.

Order by TEC part no. and indicate filter color where "X" is shown. Unless otherwise specified, amber filter will be furnished.

All Specifications Subject to Change Without Notice



Transistor Electronics Corporation

TELEPHONE
(612) 941-1100

BOX 6191
MINNEAPOLIS, MINN. 55424

TELETYPE
910-576-2860

LOCATED ON COUNTY ROAD 18 • 1/2 MILE SO. OF U. S. HWY. 169

TEC-LITE TNR-50 Series provides decimal readout from binary coded decimal input. Elements of the rectangular neon readout tube are controlled by internal transistorized circuitry. Unique, all transistor decoder-driver circuitry, which eliminates diode decoders to reduce the number of semi-conductor components by 60%, results in increased reliability. Models TNR-50A through TNR-50D are designed for 8-wire B.C.D. input, Models TNR-50E through TNR-50H, for 4-wire B.C.D. input. Supply voltage is confined to the panel area and the complete module mounts on one-inch centers.

Bezel assemblies, incorporating Polaroid® filters and protective glass are an optional feature and are described on the reverse side of this sheet.



SPECIFICATIONS

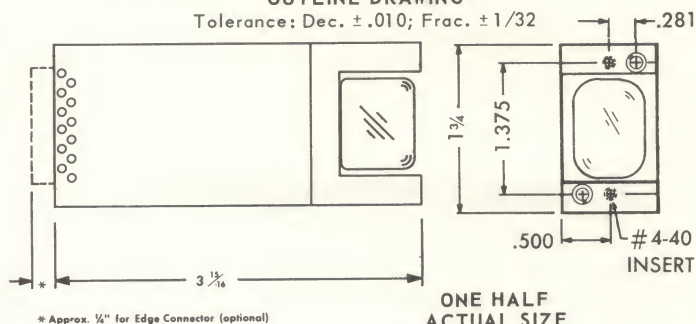
Electrical: Signal, supply, terminal connections and other electrical characteristics in the TNR-50 Series are shown in the table at the right. Additional electrical data appears on the reverse side of this sheet.

Mechanical: Dimensional and mounting diagrams are shown below. Other mechanical information is listed on the reverse side.

Materials Specifications: See reverse side.

OUTLINE DRAWING

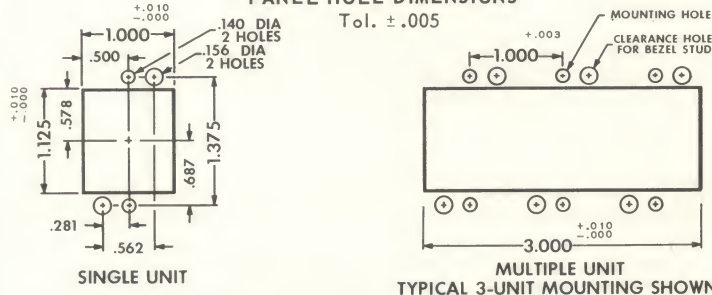
Tolerance: Dec. $\pm .010$; Frac. $\pm 1/32$



* Approx. 1/8" for Edge Connector (optional)

PANEL HOLE DIMENSIONS

Tol. $\pm .005$



SINGLE UNIT

MULTIPLE UNIT
TYPICAL 3-UNIT MOUNTING SHOWN

SIGNAL LOGIC

B. C. D.* INPUT : DIGITAL READOUT

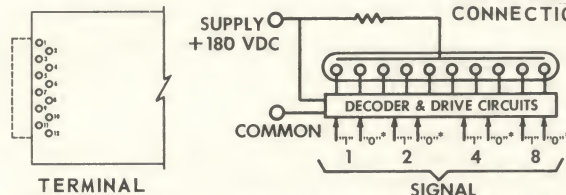
MODEL	SIGNAL VOLTAGE †		TYPICAL SIGNAL CURRENT		Internal Input Resistor
	Logic "1"	Logic "0"	Logic "1"	Logic "0"	
(8-WIRE)					
TNR-50A	+4 to +15	+5 to -2	+1 ma @ +6V	-.1 ma @ 0V	4.7K
TNR-50B	+5 to -2	+4 to +15	-.1 ma @ 0V	+1 ma @ +6V	4.7K
TNR-50C	-4 to -6	-.5 to +15	-.8 ma @ -6V	-.2 ma @ 0V	4.7K
TNR-50D	-.5 to +15	-4 to -6	-.2 ma @ 0V	-.8 ma @ -6V	4.7K
SUPPLY VOLTAGE: +180VDC ± 10 VDC @ 2 to 6 ma					
(4-WIRE)					
TNR-50E	+4 to +15	+5 to -2	+1 ma @ +6V	-.2 ma @ 0V	5K
TNR-50F	+5 to -2	+4 to +15	-.2 ma @ 0V	+1 ma @ +6V	5K
TNR-50G	-4 to -6	-.5 to +15	-1.2 ma @ -6V	-.2 ma @ 0V	3.3K
TNR-50H	-.5 to +15	-4 to -6	-.2 ma @ 0V	-1.2 ma @ -6V	3.3K
SUPPLY VOLTAGE: +180VDC ± 10 VDC @ 8 to 12 ma					

* TNR-50 Series designed for 1,2,4,8 code input. Other input codes such as 1,2,4,2; 1,2,2,4; XS-3; Gray (cyclic); XS-3 Gray, etc. can be accommodated on special order.

† Other signal & supply voltages can be accommodated on special order.

"CIRCUITRY AND MECHANICAL OPTIONS" on reverse side describes these and other options and how to order.

ELECTRICAL CONNECTIONS



TERMINAL CONNECTIONS (TYPICAL)

*INPUTS LABELED (O) NOT USED IN TNR-50E, F, G & H MODELS

0-9 (A) CHARACTER SEQUENCE PIN CONNECTIONS

TNR MODEL	TERMINAL NUMBER											
	1	2	3	4	5	6	7	8	9	10	11	12
50A-50D	Supply	Com.	N.C.	1"1"	1"0"	2"1"	2"0"	4"1"	4"0"	8"1"	8"0"	N.C.
50B-50C	Supply	Com.	N.C.	1"0"	1"1"	2"0"	2"1"	4"0"	4"1"	8"0"	8"1"	N.C.
50E-50F	Supply	Com.	N.C.	1"1"	2"1"	4"1"	8"1"	N.C.	N.C.	N.C.	N.C.	N.C.
50G-50H	Supply	Com.	N.C.	1"1"	2"1"	4"1"	8"1"	N.C.	N.C.	N.C.	N.C.	N.C.

0-7 (B) and 0-5 (C) Terminals Nos. 10 & 11 not used

0-3 (D) Terminal Numbers 8 thru 11 not used

0-1 (E) and +, - (F)* Terminal Nos. 6 thru 11 not used

* Logic "1" lights + element, Logic "0" lights - element

MODEL NUMBER CODING...Specify fully

MODEL NUMBER

See Table at upper right

TNR-50X-XX

EXAMPLE: TNR - 50D - A1

Transistorized Digital Readout; 8-wire BCD input, decimal readout; Signal "1", -.5 to +15 volts, "0", -4 to -6 volts; 0 through 9 numeral sequence; Turret Lug Terminals

CHARACTER SEQUENCE

A - 0-9

D - 0-3

B - 0-7

E - 0-1

C - 0-5

F - + -

Other Characters or Sequences: Inquire.

TERMINALS:

- 1-Cadmium Plated Turret Lug. (Standard)
- 2-Edge Connector (Optional)

POLAROID® Polaroid Corp.

NIXIE® Burroughs Corp.

All Specifications Subject to Change Without Notice



Transistor Electronics Corporation

TELEPHONE
(612) 941-1100

BOX 6191
MINNEAPOLIS, MINN. 55424

TELETYPE
910-576-2860

LOCATED ON COUNTY ROAD 18 • 1/2 MILE SO. OF U. S. HWY. 169



TRANSISTORIZED DIGITAL READOUT WITH NIXIE® TUBE

SPECIFICATIONS

ELECTRICAL

Signal and Supply Voltages: See table on reverse side.

Character Sequence: Standard units offer numeral displays of 0 through 9, 0 through 7, 0 through 5, 0 through 3, 0 through 1 and a "plus, minus" display. Combinations of these units provide lower cost readouts for such applications as degree, clock or octal displays. Other numeral, character or alpha sequences are available on special order.

Tube: Burroughs rectangular ultra-long life NIXIE. Flat face envelope brings characters closer to front of tube to increase viewing angle. Numerals are .610 high, nominal. Life expectancy: 100,000 to 200,000 hours if all elements are used uniformly. Rugged elements are not subject to catastrophic failure.

Mode of Operation: Internal transistor circuitry decodes B.C.D. and drives neon tube elements from signal changes as small as two volts.

LPS Series Power Supplies: Provide exact supply voltages for neon readout tube operation. Compact units can be mounted in any convenient location. See LPS Series power supply catalog sheet or inquire for details.

MECHANICAL

Dimensions and Mounting: See drawing on reverse side. Each TNR Series unit mounts from the rear with two #4-40 binder screws (supplied).

Socket: Integral tube socket contains a complete molded diallyl phthalate unit with bezel and panel mounting hardware.

Terminals: Cadmium plated turret lug terminals are standard. Edge connector optional at slight additional cost. (Specify requirements.)

Temperature Range: Driver assembly, operating and storage -65°C to +85°C at 95% humidity, maximum. NIXIE Tube: +20°C to +55°C.

CIRCUITRY AND

MECHANICAL OPTIONS

TNR Series Readout devices offer a wide range of functional options including coded input to decimal or octal readout, counters and memories.

Custom Built TNR Series can be designed to meet electrical or mechanical design characteristics differing from those described in this sheet. Specify all available signal and supply voltages and their polarity, mechanical or dimensional limitations, unique design (appearance) preferences and indicate quantities required for quotation. Use TEC Form 249, "Electrical-Mechanical Requirements for TEC-LITE TNR Series Transistorized Digital Readout."

Display Punctuation Lite: Decimal point, degree or colon symbol can be provided by this unit which uses transistor controlled or conventional neon or incandescent lamps. See DPL Series catalog sheet or inquire for specifications.

MATERIALS SPECIFICATIONS*

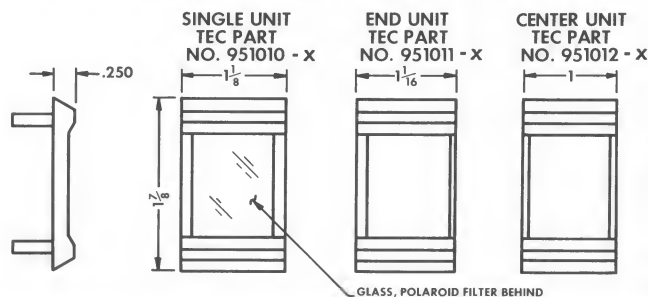
Body: (front section): Molded diallyl phthalate.

Driver Board: Epoxy glass laminate.

Terminals: Cadmium plated turret lug. Edge connector optional.

*Certificates of Compliance and Government Source Inspection Available.

BEZEL ASSEMBLIES FOR TNR SERIES



Front panel appearance and character legibility are improved by bezel assemblies which include protective glass and a choice of Polaroid filter colors: -1, amber; -2, red; -3, neutral. Bezel units, made of glass filled nylon, are made in three styles: "Single", for single unit installation, "End" and "Center" units for multiple, side-by-side installation. Bezels are installed without tools by simply pushing bezel studs into bezel mounting clips in the TNR Series body. Black color standard, other colors on special order. NOTE: Bezels designed for 3/16" maximum panel thickness.

Order by TEC part no. and indicate filter color where "X" is shown. Unless otherwise specified, amber filter will be furnished.

All Specifications Subject to Change Without Notice



Transistor Electronics Corporation

TELEPHONE
(612) 941-1100

BOX 6191
MINNEAPOLIS, MINN. 55424

TELETYPE
910-576-2860

LOCATED ON COUNTY ROAD 18 • 1/2 MILE SO. OF U. S. HWY. 169